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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/719,721

11/21/2003

Wen-Chi Chien

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08/25/2006

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EXAMINER

SHECHTMAN, SEAN P

ART UNIT

PAPER NUMBER

2125

DATE MAILED: 08/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/719,721	CHIEN, WEN-CHI	
	Examiner	Art Unit	
	Sean P. Shechtman	2125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 and 86-101 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 86-101 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-17 and 86-101 are presented for examination. Claims 1, 4, 8, 12, 14, 15, and 17 have been amended. Claims 86-101 have been added.

Drawings

2. Objections withdrawn in light of the amendment filed June 14th 2006.

Specification

3. Objections withdrawn in light of the amendment filed June 14th 2006.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-17, 87-97, 100-101 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, line 14, recites the limitation of “said pieces of manufacturing equipment”, however, claim 1 previously required “each piece of manufacturing equipment that follows” and “a current group of pieces of manufacturing equipment”. Therefore, it is not clear which manufacturing equipment is intended to be referred to by “said pieces of manufacturing equipment”.

Claim 87 recites the limitation of “the product lot”, however, claim 87 depends from claim 86 and claim 86 recites the limitation of “a plurality of product lots”, therefore it is not clear which product lot is “the product lot”.

Claim Rejections - 35 USC § 102

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1-4, 7-17 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Pat. No. 6,842,655 to Collins (hereinafter referred to as Collins).

Referring to claims 1-4, 7-17 Collins teaches a method, system, apparatus, and medium (whole document), comprising:

receiving requests for fabrication of a product lot from an order entry system (Col. 33, line 64 – Col. 34, line 12);

receiving procedures defining which manufacturing equipment is required for said fabrication of said product lot from a process information system (Col. 3, lines 21-22, process steps for product);

receiving a status of said fabrication of said product lot (Col. 3, lines 7-44, lots in queue of current process step or process step completed by each lot prior to entering queue of current process step), a criticality factor for each manufacturing equipment (Col. 6, lines 34-39 and/or Col. 34, lines 66-67 and 45-47, historical average queue size for process step with machine used to process the product), and a queue level for each piece of manufacturing equipment that follows a current group of pieces of manufacturing equipment required for said product lot from

a manufacturing information system (Col. 3, lines 7-44, the current queue size for the next process step);

calculating a priority factor for said product lot from a listing of said manufacturing equipment required for said fabrication of product (Col. 3, lines 22-23), said criticality factor (Col. 6, lines 34-39), and said queue level (Col. 3, lines 7-44, prioritize which lot is selected for processing),

balancing of loading of each group of pieces of manufacturing equipment following said current group of pieces of manufacturing equipment from said priority factor such that said product lot is processed at an expeditious time for on-time delivery (Col. 34, lines 39-50).

6. Claims 86-101 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 5,444,632 to Kline et al (hereinafter referred to as Kline).

Referring to claims 86 and 101, Kline teaches a method of selecting a selected product lot to be processed in a first piece of manufacturing equipment from a plurality of product lots ready for processing in the first piece of manufacturing equipment (whole document, especially Col. 17, lines 34-64), the method comprising:

for each product lot in the plurality of product lots ready for processing, calculating a ranking factor for the product lot (Col. 17, lines 62-64), the calculating comprising:

determining a first magnitude of processing to be done; determining a second magnitude of production capacity; and computing the ranking factor as a ratio of the first magnitude to the second magnitude (Col. 9, line 66 – Col. 10, line 3; Col. 12, line 39-40; Col. 13-14, lines 21-51, for example %CAP of C5 & C4 = 100% because the machine has a 48 wafer capacity, C5 has 24

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wafers and C4 has 24 wafers, therefore $100 * ((24 + 24) / 48) = 100\%$ and by reference to a point calculating graph such as that shown in Fig. 11 returns a ranking factor of 4.8 points); determining a highest priority ranking factor (Col. 13-14, lines 21-51, for example lot C1 and C2); and designating a product lot with the highest priority ranking factor as the selected product lot (Col. 14, lines 10-14, picking the winner).

87. The method of claim 86 wherein the calculating further comprises identifying a piece of manufacturing equipment that will process the product lot subsequent to processing of the product lot by the piece of manufacturing equipment (Col. 17 lines 34-35).

88. The method of claim 87 wherein the first magnitude is a count of product lots ready for processing in the second piece of manufacturing equipment (Col. 17 lines 34-35; Col. 9, line 66 – Col. 10, line 3; Col. 12, line 39-40; Col. 13-14, lines 21-51).

89. The method of claim 87 wherein the second magnitude is a function of: a count of machines of a type of the second piece of manufacturing equipment; an average number of product lots that a machine of the type of the second piece of manufacturing equipment is capable of processing; and an efficiency factor for the second piece of manufacturing equipment (Col. 17 lines 34-35; Col. 9, line 66 – Col. 10, line 3; Col. 12, line 39-40; Col. 13-14, lines 21-51,).

90. The method of claim 87 wherein one or more product lots ready for processing in the second piece of manufacturing equipment will be subsequently processed by a third piece of manufacturing equipment and the first magnitude is a sum of: a count of product lots ready for processing in the second piece of manufacturing equipment that will be subsequently processed by the third piece of manufacturing equipment; a count of product lots in processing by the

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second piece of manufacturing equipment that will be subsequently processed by the third piece of manufacturing equipment; a count of product lots ready for processing in the third piece of manufacturing equipment (Col. 17 lines 34-35; Col. 9, line 66 – Col. 10, line 3; Col. 12, line 39-40; Col. 13-14, lines 21-51,).

91. The method of claim 87 wherein one or more product lots ready for processing in the second piece of manufacturing equipment will be subsequently processed by a third piece of manufacturing equipment, and the second magnitude is a function of: a count of machines of a type of the third piece of manufacturing equipment; an average number of product lots that a machine of the type of the third piece of manufacturing equipment is capable of processing; and an efficiency factor for the third piece of manufacturing equipment (Col. 17 lines 34-35; Col. 9, line 66 – Col. 10, line 3; Col. 12, line 39-40; Col. 13-14, lines 21-51,).

92. The method of claim 87 wherein the calculating further comprises: determining if the second piece of equipment is of a first type; and if the second piece of equipment is not of the first type, assigning the ranking factor a first priority level (Col. 14, lines 50-57; Col. 13-14, lines 63- Col. 15-16, end of table).

93. The method of claim 92 wherein the first type is critical (Col. 14, lines 50-56).

94. The method of claim 92 wherein the first priority level is zero (Col. 15, for example, SWB = 0).

95. The method of claim 87 wherein one or more product lots ready for processing in the second piece of manufacturing equipment will be subsequently processed by a third piece of manufacturing equipment, and the calculating further comprises: determining if the third piece of equipment is of a type; and if the third piece of equipment is not of the type, assigning the

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ranking factor a priority level (Col. 14, lines 50-57; Col. 13-14, lines 63- Col. 15-16, end of table).

96. The method of claim 95 wherein the type is critical (Col. 14, lines 50-56).

97. The method of claim 95 wherein the priority level is zero (Col. 15, for example, SWB = 0).

98. The method of claim 86 wherein the product lots are substrates for integrated circuits (Col. 1, lines 29-35).

99. The method of claim 86 wherein the first piece of manufacturing equipment is a piece of integrated circuit processing equipment (Col. 1, lines 29-35).

100. The method of claim 99 wherein the piece of integrated circuit processing equipment is one out of a group consisting of a furnace and a substrate cleaning machine (Col. 8, lines 10-34; Col. 4, lines 34-45).

Allowable Subject Matter

7. Claims 5 and 6 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: Neither Collins nor the prior art of record, taken either alone or in obvious combination disclose method, system, apparatus, and medium for dispatching of at least one product lot for processing to manufacturing equipment within processing stages of a manufacturing line, having all the claimed features of applicant's instant invention, specifically including the calculation of the priority factor using formulae of claims 5 and 6.

Response to Arguments

8. Applicant's arguments filed June 14th 2006 have been fully considered but they are not persuasive. Applicant argues that Collins teaches that only a certain machine has a criticality factor. The examiner respectfully disagrees. Collins clearly teaches a present and historical queue size for each machine and their relationship used to determine lot priority (Col. 6, line 27 – Col. 7, line 63). The examiner respectfully submits that any of the present or historical queue size for each machine or their relationship used to determine lot priority is a criticality factor.

Conclusion

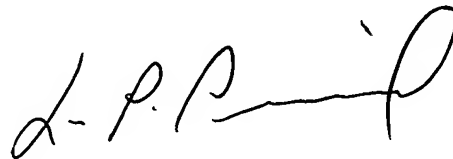
9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean P. Shechtman whose telephone number is (571) 272-3754. The examiner can normally be reached on 9:30am-6:00pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P. Picard can be reached on (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'L. P. Picard', with a stylized flourish at the end.

SPS

Sean P. Shechtman

July 20, 2006

LEO PICARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100